



**Five-Year Review Report**  
**Smithtown Groundwater Contamination Superfund Site**  
**Town of Smithtown**  
**Suffolk County, New York**

**Prepared by:**

**United States Environmental Protection Agency**  
**Region 2**  
**New York, New York**

**September 2011**

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### Acronyms Used in this Document

EPA	United States Environmental Protection Agency
FS	Feasibility Study
GAC	Granular Activated Carbon
MCLs	Maximum Contaminant Levels
µg/l	Micrograms per Liter
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
PCE	Tetrachloroethylene
PCOR	Preliminary Close-Out Report
PPB	Parts Per Billion
PVC	Polyvinyl Chloride
RAL	Removal Action Level
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
SCDHS	Suffolk County Department of Health Services
TCE	Trichloroethylene
VOCs	Volatile Organic Compounds
VPW	Vertical Profile Well

## **EXECUTIVE SUMMARY**

This is the first five-year review for the Smithtown Groundwater Contamination site. The site is located in the Town of Smithtown, Suffolk County, New York. Currently, the remedy is functioning as intended by the decision documents and is protecting human health and the environment.

## Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name ( <i>from WasteLAN</i> ): Smithtown Groundwater Contamination site		
EPA ID ( <i>from WasteLAN</i> ): NY0002318889		
Region: 2	State: NY	City/County: Town of Smithtown / Suffolk County
SITE STATUS		
NPL Status: <input checked="" type="checkbox"/> Final <input type="checkbox"/> Deleted <input type="checkbox"/> Other (specify)		
Remediation Status (choose all that apply): <input type="checkbox"/> Under Construction <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Complete		
Multiple OUs? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	Construction completion date: 09/29/06	
Are portions of the site in use or suitable for reuse? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A		
REVIEW STATUS		
Lead agency: <input checked="" type="checkbox"/> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input type="checkbox"/> Other Federal Agency		
Author name: Gloria M. Sosa		
Author title: Remedial Project Manager	Author affiliation: EPA	
Review period: 09/29/2006 - 09/29/2011		
Date(s) of site inspection: September 13, 2011		
Type of review: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div> <input type="checkbox"/> Post-SARA    <input type="checkbox"/> Pre-SARA  <input type="checkbox"/> Non-NPL Remedial Action Site  <input type="checkbox"/> Regional Discretion </div> <div> <input checked="" type="checkbox"/> Policy  <input type="checkbox"/> Statutory </div> <div> <input type="checkbox"/> NPL-Removal only  <input type="checkbox"/> NPL State/Tribe-lead </div> </div>		
Review number: <input checked="" type="checkbox"/> 1 (first) <input type="checkbox"/> 2 (second) <input type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify)		
Triggering action: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div> <input type="checkbox"/> Actual RA Onsite Construction at OU #1  <input checked="" type="checkbox"/> Construction Completion  <input type="checkbox"/> Other (specify) </div> <div> <input type="checkbox"/> Actual RA Start at OU #  <input type="checkbox"/> Previous Five-Year Review Report </div> </div>		
Triggering action date ( <i>from WasteLAN</i> ): 09/29/2006		
Due date ( <i>five years after triggering action date</i> ): 09/29/2011		
Does the report include recommendation(s) and follow-up action(s)? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no Acres in use or suitable for use:                      restricted: <u>0</u> unrestricted: <u>0</u>		

### **Five-Year Review Summary Form (continued)**

#### *Issues, Recommendations, and Follow-Up Actions*

This report did not identify any issue or make any recommendation for the protection of public health and/or the environment which was not included or anticipated by the site decision documents.

#### *Other Comments on Operation, Maintenance, Monitoring, and Institutional Controls*

EPA will continue to collect periodic groundwater quality data from the existing groundwater monitoring wells at the site. EPA will consider connecting any residences which use private wells to the public water supply when requested by the homeowner until drinking-water standards are achieved in the aquifer within the remedial area.

#### *Protectiveness Statement*

The remedy at the Smithtown Groundwater Contamination Superfund site is expected to be protective upon completion, and in the interim, exposure pathways that could result in unacceptable risks are being controlled.

## **I. Introduction**

This five-year review for the Smithtown Groundwater Contamination site (site), located in the Town of Smithtown, Suffolk County, New York, was conducted by United States Environmental Protection Agency (EPA) Remedial Project Manager (RPM) Gloria M. Sosa. The review was conducted pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §9601 *et seq.* and 40 CFR 300.430(f)(4)(ii) and in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P (June 2001) (the five-year review guidance). The purpose of five-year reviews is to ensure that implemented remedies protect public health and the environment and that they function as intended by the site decision documents. This report will become part of the site file.

The groundwater remedy for the site is intended to restore the aquifer to drinking water standards. In accordance with Section 1.3.2 of the five-year review guidance, a policy five-year review is triggered by the signature date of the Preliminary Close-Out Report (PCOR). The trigger date for this first five-year review is September 29, 2006, the approval date of the PCOR. This five-year review found that the selected remedy remains protective of human health and the environment.

## **II. Site Chronology**

Table 1 (attached) summarizes the site-related events from discovery to the present.

## **III. Background**

### *Site Location*

The site includes an area that has contaminated groundwater within the Villages of Nissequogue, Head of the Harbor and the Hamlet of St. James, Town of Smithtown, Suffolk County, New York. The site is situated in an approximately four-square mile predominantly residential area bounded by Stony Brook Harbor and an east-west line defined by Spring Hollow Road to the north; the Nissequogue River to the west and Edgewood Avenue and North Country Road (Route 25A) to the south; and, Hitherbrook Road to the east. Figure 1 presents the site location.

### *Physical Characteristics*

The site topography is complex, with elevations ranging from sea level near the surface water bodies, Stony Brook Harbor and the Nissequogue River, to more than 200 feet above sea level. Prior to the discovery of the groundwater contamination, homes in this predominantly residential area primarily use private wells for potable drinking water and septic systems for sanitary wastewater disposal. Some business/retail development is located in St. James to the south/southeast.

### *Site Geology/Hydrogeology*

The wells at the site are within the unconfined Upper Glacial/Magothy aquifer unit. The aquifer is approximately 500 feet thick; the depth to the water table ranges from less than 5 feet to 200 feet below ground surface (bgs). The groundwater flow direction is complex in the site vicinity. The regional flow is toward the north from the business/retail area towards the predominantly residential area; however, the two major



bodies of water, the Nissequogue River and Stony Brook Harbor induce flow to the west and east, respectively.

### *Land and Resource Use*

The site is located in a residential area covering portions of the villages of Nissequogue and Head of the Harbor within the Town of Smithtown, just north of the Hamlet of St. James, Suffolk County, New York. The predominant land use within the boundaries of the site is residential (single family). The residential lot sizes are over one acre on average. A horse farm is located within the north-central portion of the site along Moriches Road. The Nature Conservancy - Long Island Chapter owns a parcel of property approximately 67 acres in size in the central portion of the site. Self-guided marked trails are available for hiking, bird watching, and other outdoor nature-related activities.

Prior to the discovery of contaminated groundwater, residents of both villages used private wells for both drinking and irrigation. Currently, the majority of the residences within the site are connected to the public-water supply. Water is provided by the Suffolk County Water Authority and the St. James Water Authority.

Limited commercial retail, office development (including gasoline stations and strip malls) and a high school are located south of the residential area. The more densely-developed residential and commercial retail districts of St. James are located less than one-quarter mile from the site, south of the Port Jefferson Branch of the Long Island Railroad. Future use of the site is expected to remain unchanged.

### *History of Contamination*

On October 9, 1997, EPA received a written request from the New York State Department of Environmental Conservation (NYSDEC) requesting assistance in funding alternative water supplies for residences affected by contaminated groundwater. Attached to NYSDEC's request for assistance was a private well sampling survey, prepared by the Suffolk County Department of Health Services (SCDHS), which presented drinking water results from 35 private wells in the area. Analytical data from this survey indicated that several wells were contaminated with volatile organic compounds (VOCs), primarily tetrachloroethylene (PCE).

SCDHS conducted a private well survey in 1997. SCDHS collected samples from approximately 150 homes throughout the area of the site. Analytical results from these samples indicated that 23 residences were contaminated with PCE at concentrations exceeding the State and federal maximum contaminant level (MCL) of 5 parts per billion (ppb). Four of these residences had PCE concentrations exceeding EPA's Removal Action Level (RAL) of 70 ppb. As a follow-up to the SCDHS sampling, in April 1998, EPA collected 330 samples from 295 private wells to further delineate the extent of PCE contamination. Based on the SCDHS and EPA analytical data, a total of 35 residential wells were identified as contaminated with PCE (or its breakdown products) at concentrations above the MCLs. The RAL for PCE was exceeded in six homes. The SCDHS advised all affected residents not to use the well water for drinking or cooking purposes and to limit exposure through direct contact.

SCDHS sampled 11 current and former commercial facilities located south-southeast of the contaminated wells from November 1997 through April 1998 to identify potential sources of the contaminated groundwater. These investigations included the installation and subsequent sampling of test wells in the area of these facilities. Each facility utilizes a private sanitary sewage disposal system consisting of septic tanks, cesspools/leaching pits, and/or other on-site wastewater disposal. Sample results showed detections of a number of VOCs, suggesting that several of the suspected source facilities were discharging hazardous wastes to the subsurface through their septic systems. Concentrations of PCE in liquid samples ranged from non-detectable levels to 65,000,000 ppb. PCE in sludge samples ranged from non-detectable levels to 160,000 ppb. At the direction of SCDHS, the septic systems were cleaned out subsequent to the 1997-1998 sampling. SCDHS issued letters to each property owner that clean outs were adequate and that no further action was necessary.

In April 1998, EPA began the delivery of bottled water on an emergency basis to the affected homes where the RAL was exceeded. In June 1998, EPA expanded its delivery of bottled water to all residences where the MCLs for PCE or its breakdown products were exceeded.

On July 23, 1998, an EPA Action Memorandum was signed that authorized Removal Action activities to be conducted at the site. Removal activities were restricted to homes that exceeded EPA's MCLs. EPA provided the service connection to the public supply from the SCWA distribution system to the household water distribution system at residences where the MCL was exceeded and where public water was available. Existing wells were disconnected. At residences where the MCL was exceeded and public water was not available, EPA installed individual household granular activated carbon (GAC) treatment systems or upgraded the existing treatment systems installed independently by the residents.

In 1998, EPA collected samples from several hundred private wells in the Smithtown area. As a result of this sampling, EPA provided hookup to the public water supply or treatment at the tap for 39 residences with PCE levels in private wells above or equal to 5 ppb.

On January 19, 1999, the site was placed on the National Priorities List (NPL).

In 1999, EPA sent requests for information to the owner/operators of the 11 suspected source areas seeking, among other things, information regarding historical disposal practices at these locations. Despite the resulting documentary evidence collected by EPA and the data previously generated by the SCDHS, EPA's Remedial Investigation (RI) field work did not confirm that any of the suspected source areas was contributing to the groundwater contamination.

In the spring of 2003, initial groundwater screening using vertical profile wells (VPWs) was performed at the 11 locations of the potential source areas. Twenty-five VPW groundwater screening samples were collected. The groundwater MCL screening criteria for site-related chlorinated VOCs were exceeded at only one location, at which a monitoring well was installed. Septic system sludge and wastewater samples were also

collected. The resulting data indicated that waste handling practices were improved at the 11 facilities since septic systems were cleaned out in the late 1990's and that these facilities were not currently contributing contamination to the groundwater.

The inability to pinpoint the source(s) of contamination at this site is affected by factors which include the possibility that disposal occurred more than 30 years ago and may have involved a relatively small total volume (e.g., several drums or less); disposal may have occurred in relatively small volumes over extended time periods; the contamination has likely been subject to dispersion, dilution and volatilization; and the disposal more likely than not occurred in multiple locations (including hundreds of septic sources) spread over a significant land area with varied topography and geological strata.

Subsequent to the RI, EPA conducted a Feasibility Study (FS) at the site. The FS, a detailed analysis of remedial alternatives for cleaning up the site, evaluated the alternatives with respect to the Superfund evaluation criteria. EPA selected a preferred alternative and issued a Proposed Plan in June 2004 which solicited public comments on the preferred alternative. EPA issued a ROD in September 2004 documenting the selected remedy.

#### *Initial Response*

On October 9, 1997, EPA received a written request from the NYSDEC requesting assistance in providing alternative water supplies for residences affected by contaminated groundwater. Attached to NYSDEC's request for assistance was a private well sampling survey, prepared by the SCDHS, which presented drinking water results from 35 private wells in the area. Analytical data from this survey indicated that several wells were contaminated with VOCs, primarily PCE. As a result, EPA implemented the removal actions discussed above.

#### *Basis for Taking Action*

Following the listing of the site on the NPL, EPA performed a RI at the site from 1999 through 2005. The results from the analysis of environmental samples taken during the RI indicated that the groundwater was contaminated with PCE, trichloroethylene (TCE) and arsenic.

The baseline human health risk assessment concluded that an unacceptable risk existed for future residents' consumption of groundwater; this was primarily driven by arsenic, PCE and TCE concentrations in the groundwater.

#### IV. Remedial Actions

##### *Remedy Selection*

A ROD was issued by EPA in September 2005 documenting the selected remedial action for the site: *Selected Groundwater Response and Alternate Water Supply Remedy*.

The following remedial action objectives for groundwater were established for the Site:

- Prevent or minimize potential current and future human exposures including ingestion and dermal contact with VOC-contaminated groundwater that exceeds Federal and State drinking water standards, and
- Restore groundwater to levels which meet Federal and State drinking water standards within a reasonable time frame.

The RAO for surface water was developed to verify that no significant impact on surface water quality will occur from VOC contamination reaching the Nissequogue River and Stony Brook Harbor. VOCs do not appear to be concentrating in surface water and the areas are subjected to daily tidal flushes.

- Verify that no significant impact on the surface water quality will occur from VOC contamination reaching the Nissequogue River and the Stony Brook Harbor.

The major components of the remedy include:

- Approximately 270 homes within the affected area of the site will be connected to either the Suffolk County Water Authority or St. James Water District for their future potable water needs. This action will provide the physical connection from the houses to the water mains near the houses. After hookup to the water mains, the residential wells will be properly abandoned (in accordance with New York State requirements) to eliminate possible risk to human health.
- No active groundwater remedy is being utilized. However, aquifer restoration is anticipated to occur within a reasonable time frame based on natural processes such as dispersion, dilution and volatilization. Long-term monitoring to ensure aquifer restoration will include groundwater and surface water sampling. Surface water samples will be collected in select locations along the Nissequogue River and Stony Brook Harbor. Groundwater will be sampled from selected monitoring wells to monitor the contaminant concentrations and migration over time. Additional monitoring wells will be installed as necessary to allow for effective monitoring of the contamination.
- Institutional controls such as groundwater use restrictions (through well drilling permit restrictions) will be utilized to prevent future use of contaminated groundwater.
- A review of site conditions will be conducted no less often than once every five years using data obtained through the annual groundwater sampling program.

The site reviews will include an evaluation of the extent of contamination and an assessment of contamination migration and attenuation over time. The long-term monitoring program may be modified, if necessary, based on the monitoring results.

### *Remedy Implementation*

Remedial Construction Activities commenced on September 15, 2005, when a Task Order was opened by EPA's removal contractor, WRS Infrastructure and Environment, Inc (WRS). EPA and WRS mobilized at the site on November 15, 2005.

The ROD estimated that there were 270 homes within the area of remediation. EPA subsequently determined that there were 692 residences within the remedial area. In addition, EPA determined that 581 of these residences were already connected to the public-water supply. This was accomplished through consultation with the SCWA, by confirmation through physical inspection (presence of water meter), by consultation with homeowners (either by telephone or in person) and through responses to EPA mailings to homeowners.

EPA provided lateral water lines and service connections to 79 homes within the remedial area. The lateral water lines and service connections were installed by subcontractors to WRS, including Suffolk Water Connections, We Dig Long Island and Asplundh. These water lines were installed either by directional drilling, air missile or trenching.

Polyvinyl chloride (PVC) pipe manufactured and designed for use in potable water systems was used from the water main to within fifteen (15) feet of the residence. Copper pipe was then utilized for the final 15 feet as is required by SCWA and joined to the PVC pipe. The pipe was installed at approximately 4.5 feet below grade. The pipe was at the minimum one inch in diameter. A pressure regulator was installed inside the residence to ensure there would be no damage caused by an increase in the water pressure.

EPA entered into a contract through WRS with SCWA to extend the water main on Smith Lane in order to connect several homes that were not serviced by the existing main. SCWA extended the existing main to the end of Smith Lane and WRS subcontracted the installation of the lateral water lines and service connections.

Most residences were connected to the public water supply provided by SCWA and just a few homes were connected to the St. James Water District.

Thirty-two (32) residences declined to be connected by EPA to the public water supply. These residents informed EPA of their intent to decline either through a form supplied by EPA, by telephone or personal interview with EPA personnel. Residents declined to be connected to the public water supply for various reasons, including having a preference for well water, not wanting to interact with EPA, and expressing an inability to afford the water main installation surcharge.

EPA issued a Preliminary Close-out Report that documented the completion of the residential hookups in September 2006. EPA subsequently issued an Interim Remedial Action Report in September 2009. A final close-out report will be issued by EPA when O&M reports indicate that PCE and its daughter products in the aquifer at the site are below drinking water standards.

Since 2006, several residents changed their opinions concerning using their wells as a potable water supply and requested hookups to the public-water supply. In addition, property ownership changed at several residences and some of these new owners requested a connection to the public-water supply. As a result, EPA has connected 10 additional residences to the public-water supply. As a result 89 of the 111 eligible homes have been connected to date. If any of the remaining eligible homes request a connection in the future, EPA will consider such requests in light of the contaminant levels that remain in the aquifer at the time of the request.

#### *Institutional Controls Implementation*

Institutional controls for this site include continued reliance on existing SCDHS regulations that require new residences and businesses to hook up to public water supplies whenever public water mains are reasonably available. Where such mains are not available, the SCDHS regulations require proposed wells for new residences and businesses to be tested for water quality prior to use. For certain contaminant ranges, appropriate treatment is to be provided. Application of these regulations should minimize the potential for exposure to contaminated drinking water. Suffolk County will continue to enforce this requirement at least as long as the groundwater is affected by contaminants.

#### *Operation and Maintenance*

No active groundwater remedy is being utilized. However, aquifer restoration is anticipated to occur within a reasonable time frame based on natural processes such as dispersion, dilution and volatilization. The use of a treatment technology would not result in a significant decrease in the toxicity, mobility and volume of the hazardous substances. To ensure protectiveness, a long-term groundwater and surface water monitoring program will be instituted to collect data on contaminant concentrations and movement at the Site. Eleven existing monitoring wells will be used for the long-term groundwater monitoring program. Additionally, six surface water samples will be collected from Stony Brook Harbor and the Nissequogue River. Groundwater and surface water (seeps observed at low tide) samples will be collected annually and analyzed for VOCs using low detection limit analytical methods.

### **V. Five-Year Review Process**

#### *Administrative Components*

The Five-Year Review Team consisted of: Gloria M. Sosa (Remedial Project Manager), Nicole Bujalski (Hydrogeologist), Michael Sivak (Risk Assessor), Pete Mannino (Western New York Remediation Section Chief), and Brian Carr (Attorney).

## *Community Involvement*

The EPA Community Involvement Coordinator for the site, Cecilia Echols, published a notice in the *Times of Smithtown Township*, a local newspaper, on July 21, 2011, notifying the community of the initiation of the five-year review process. The notice indicated that EPA would be conducting a five-year review of the site to ensure that the site is protective of public health and the environment and that the implemented components of the remedy are functioning as designed. It also indicated that once the five-year review is completed, the results would be made available in the local site repository. In addition, the notice included the RPM's address and telephone number for questions related to the five-year review process or the site.

## *Document Review*

The documents, data, and information that were reviewed in completing the five-year review are summarized in Table 2 (attached).

## *Data Review*

Tables 3 and 4 present the results of the groundwater sampling conducted at the site. Figure 2 presents the locations of the monitoring wells and the direction of groundwater flow.

EPA conducted groundwater monitoring at the site in April 2009. EPA collected groundwater samples via low flow sampling from 11 monitoring wells on site. In addition, EPA collected surface water samples from the Nissequogue River and Stony Brook Harbor. PCE was detected in samples from 2 monitoring wells above its MCL of 5 ppb at concentrations of 5.9 ppb (MW-6S) and 23 ppb (MW-4D); cis-1,2-dichloroethene, a degradation product of PCE, was detected in one well at a concentration of 5.6 ppb (MW-1S) which exceeds the NYSDEC drinking water standard of 5 ppb. There were no detections of contaminants above the reporting level in the surface water.

Groundwater monitoring was conducted by EPA in November 2009 at 10 of the 11 existing monitoring wells because one well was not able to be sampled. PCE was detected in 3 monitoring wells above the MCL at concentrations of 6.9 ppb (MW-6S), 9.8 ppb (MW-5S), and 25 ppb (MW-4I); cis-1,2-dichloroethene, a degradation product of PCE, was detected in one well at a concentration of 6.4 ppb (MW-1S) which exceeds the NYSDEC drinking water standard.

EPA sampled the existing 11 monitoring wells in May 2011. PCE was detected in 2 monitoring wells above the MCL at concentrations of 7.1 ppb (MW-5S) and 15 ppb (MW-4D). Cis-1,2-dichloroethene was not detected above federal MCLs or NYSDEC drinking water standards in any of the wells sampled during this sampling event.

Groundwater data collected from April 2009 to May 2011 indicates low level exceedences of PCE above MCL and 1,2 cis-DCE above NYSDEC drinking water standards at a few of the monitoring wells. Surface water data continue to indicate that there is no adverse impact to surface water.

### *Site Inspection*

On September 13, 2011, a five-year review-related site inspection was conducted by EPA RPM, Gloria M. Sosa. Nothing of note was observed during the site inspection.

### *Interviews*

No interviews were conducted during the review period.

### *Institutional Controls Verification*

The intent of the institutional controls is to reduce potential future exposure to contaminants by restricting use of potentially contaminated groundwater. Institutional controls for this site include continued reliance on existing SCDHS regulations that require new residences and businesses to hook up to public water supplies whenever public water mains are reasonably available. Where such mains are not available, the SCDHS regulations require proposed wells for new residences and businesses to be tested for water quality prior to use. For certain contaminant ranges, appropriate treatment is to be provided. Application of these regulations should minimize the potential for exposure to contaminated drinking water. Suffolk County will continue to enforce this requirement at least as long as the groundwater is affected by contaminants.

### *Other Comments on Operation, Maintenance, and Institutional Controls*

There are no other comments or suggestions related to operation, maintenance, and institutional controls.

## **VI. Technical Assessment**

*Question A: Is the remedy functioning as intended by the decision documents?*

Yes, the remedy is functioning as intended. The residents which were affected by the ground water contamination were provided with water lines and service connections in order to insure protection of public health. Appropriate institutional controls were also put in place to restrict future access to contaminated ground water. These actions have ensured that the remedy is currently preventing any complete pathway for exposure.

The monitoring data results indicate that PCE, which is the principle COC, has been detected at or above MCLs in wells 4D, 5S, and 6S in 2009 and 4D and 5S in 2011. These wells are located in the northeast quadrant of the site which is up and side gradient from the remaining wells listed in the data review table. The contamination does not appear to be expanding or migrating at this time. Although PCE was detected in MW-E and MW-1S for the first time in 2011, the detections were below the MCL and there are monitoring wells located in between those wells and MW-4D, 5S, and 6S, screened at similar depths, which had non-detectable concentrations in 2009 and 2011. When migration occurs, it can usually be seen in all wells within the groundwater pathway.



The concentrations of PCE in wells 4D, 5S, and 6S have decreased from 2009 to 2011 and it is anticipated that this trend will continue. With the concentrations in 2011 all below 16 ppb, the natural actions of dilution, dispersion and volatilization will likely restore the aquifer to drinking water standards within a reasonable time frame.

The concentrations of cis-1,2 DCE in well 1S was slightly above the NYSDEC drinking water standard in both 2009 sampling events. However, the most recent 2011 sampling event showed no exceedences of cis-1,2 DCE in any of the wells sampled. This shows that cis-1,2 DCE contamination was localized and it appears to have been addressed by natural flushing processes.

Surface water data indicates that groundwater contaminant concentrations discharging to surface water do not have an adverse impact on the surrounding water bodies.

*Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?*

The remedial action objectives for the site are to protect human health from exposure (via ingestion and dermal contact) to VOCs in groundwater at concentrations in excess of New York State groundwater standards and Federal MCLs, restore the aquifer to meet these State and Federal standards in a reasonable time frame, and verify that no significant impact on the surface water quality will occur from VOC contamination reaching the Nissequogue River and the Stony Brook Harbor. These remedial actions are still valid.

There are currently no complete exposure pathways due to the remedial action that has been completed (i.e., connecting all interested residents to public water). Therefore, the current exposure parameters and toxicity values that would be used are not relevant, as a current evaluation would not quantify risks or hazards.

The cleanup levels that were chosen for the groundwater were the MCLs. These levels are still valid.

An exposure pathway that was not considered in the original assessment is vapor intrusion into indoor air. However, since the VOC concentrations in the groundwater are less than appropriate vapor intrusion screening values, the potential for soil vapor intrusion issues related to this site is highly unlikely.

*Question C: Has any other information come to light that could call into question the protectiveness of the remedy?*

No.

### *Technical Assessment Summary*

Based upon the results of the five-year review, it has been concluded that:

- the remedy has prevented residents from drinking contaminated groundwater; and
- no additional measures are needed to protect public health.

### **VII. Recommendations and Follow-Up Actions**

There are no recommendations or follow-up actions stemming from this five-year review.

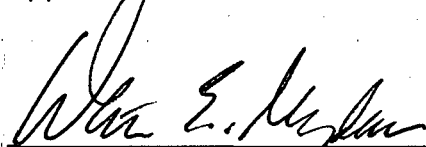
### **VIII. Protectiveness Statement**

The remedy at the Smithtown Groundwater Contamination Superfund site is expected to be protective upon completion, and in the interim, exposure pathways that could result in unacceptable risks are being controlled.

### **IX. Next Review**

Since hazardous substances, pollutants or contaminants remain at the Smithtown Groundwater Contamination Superfund site which do not allow for unlimited use or unrestricted exposure, in accordance with 40 CFR 300.430 (f) (4) (ii), the remedial action for the site shall be reviewed no less often than every five years. The next five-year review for the site should be completed within five years of the signature date below.

Approved



Walter E. Mugdan, Director  
Emergency and Remedial Response Division  
EPA – Region 2

Sept. 29, 2011  
Date

**TABLE 1:****Chronology Of Site Events**

<b>REMEDIAL ACTIVITY</b>	<b>DATE</b>
SCDHS conducts private- well survey	1997
NYSDEC requests EPA assistance in providing alternate water supply	October 1997
EPA Removal Action begins	April 1998
Site Placed on National Priorities List	January 1999
RI/FS activities initiated by EPA	March 1999
Record of Decision issued by EPA	September 2004
Remedial Construction begins	September 2005
EPA issues Preliminary Close-out Report	September 2006
Removal Completion (contract close-out)	September 2009
EPA conducts groundwater & surface-water sampling	May 2009
EPA conducts groundwater sampling	November 2009
EPA conducts groundwater sampling	May 2011

**TABLE 2:****Documents, Data and Information Reviewed in  
Completing the Five-Year Review**

<b>DOCUMENT</b>	<b>DATE</b>
RI/FS	August 2004
Record of Decision	September 2004
Preliminary Close-Out report	September 2006
Interim Remedial Action Report	September 2009
DESA Monitoring Report	June 2009
DESA Monitoring Report	December 2009
DESA Monitoring Report	June 2011

**TABLE 3:****SUMMARY of PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS**

<b>MONITORING WELL</b>	<b>MAY 2009</b>	<b>NOV 2009</b>	<b>MAY 2011</b>
MW – 4S	ND	ND	ND
MW – 4I	ND	ND	0.85 µg/L
MW – 4D	<b>23 µg/L</b>	unable to sample	<b>15 µg/L</b>
MW – 5S	4.8 µg/L	<b>9.8 µg/L</b>	<b>7.1 µg/L</b>
MW – 5I	ND	ND	0.77 µg/L
MW – 6S	<b>5.9 µg/L</b>	<b>6.9 µg/L</b>	1.0 µg/L
MW – 6I	ND	ND	ND
MW – C	ND	ND	ND
MW – E	ND	ND	0.56 µg/L
MW – 1S	ND	ND	0.9 µg/L
MW – 1I	ND	ND	ND

**TABLE 4:****SUMMARY of CIS-1,2-DICHLOROETHENE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS**

<b>MONITORING WELL</b>	<b>MAY 09</b>	<b>NOV 09</b>	<b>MAY 2011</b>
MW – 4S	ND	ND	ND
MW – 4D	2.4 µg/L	unable to sample	1.0 µg/L
MW – 4I	ND	2.1 µg/L	ND
MW – 5S	ND	ND	ND
MW – 5I	ND	ND	ND
MW – 6I	ND	ND	ND
MW – 6S	ND	0.57 µg/L	ND
MW – C	ND	ND	ND
MW – E	ND	ND	ND
MW – 1I	ND	ND	ND
MW – 1S	5.6 µg/L	6.4 µg/L	2.5 µg/L

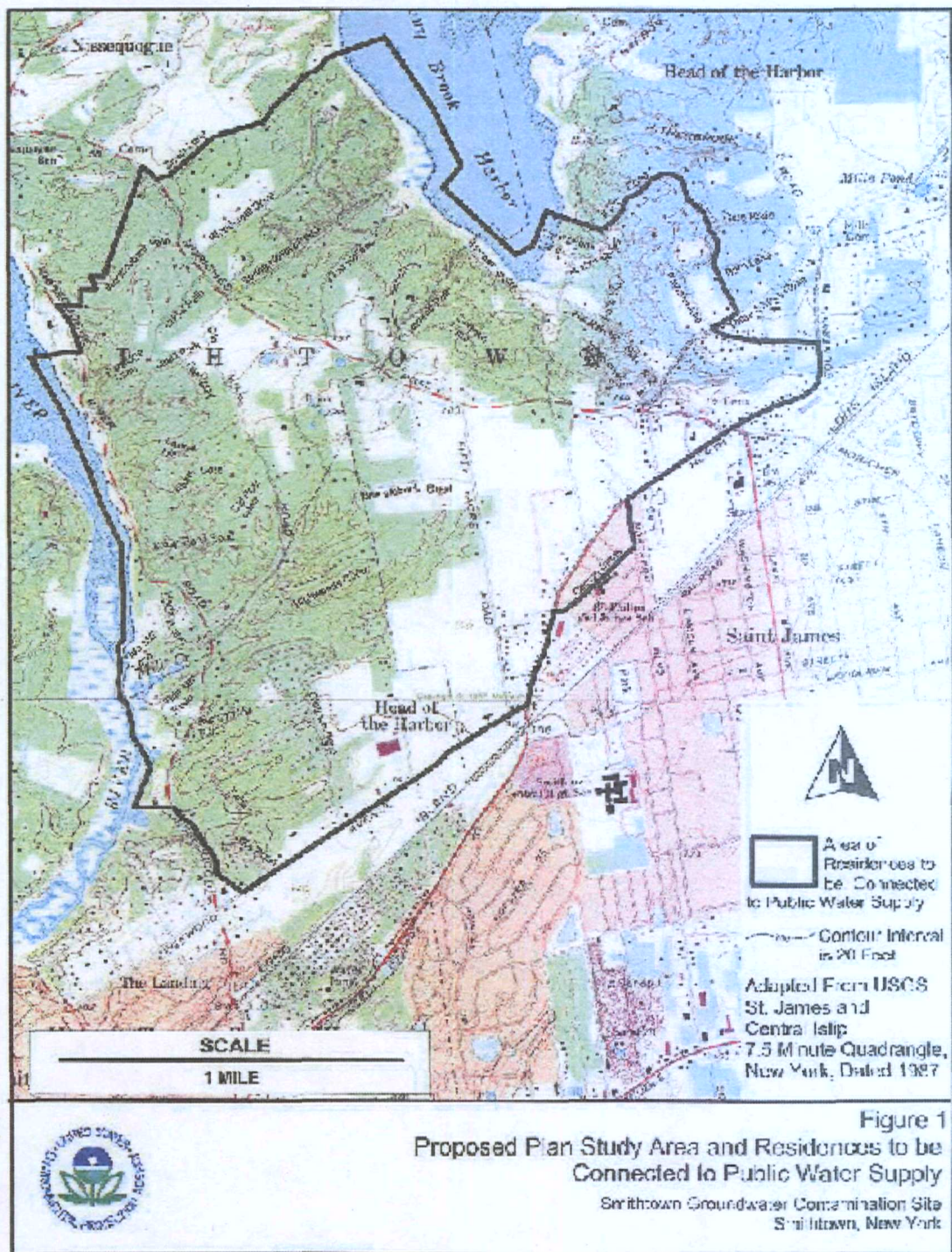


FIGURE 1: SITE LOCATION MAP



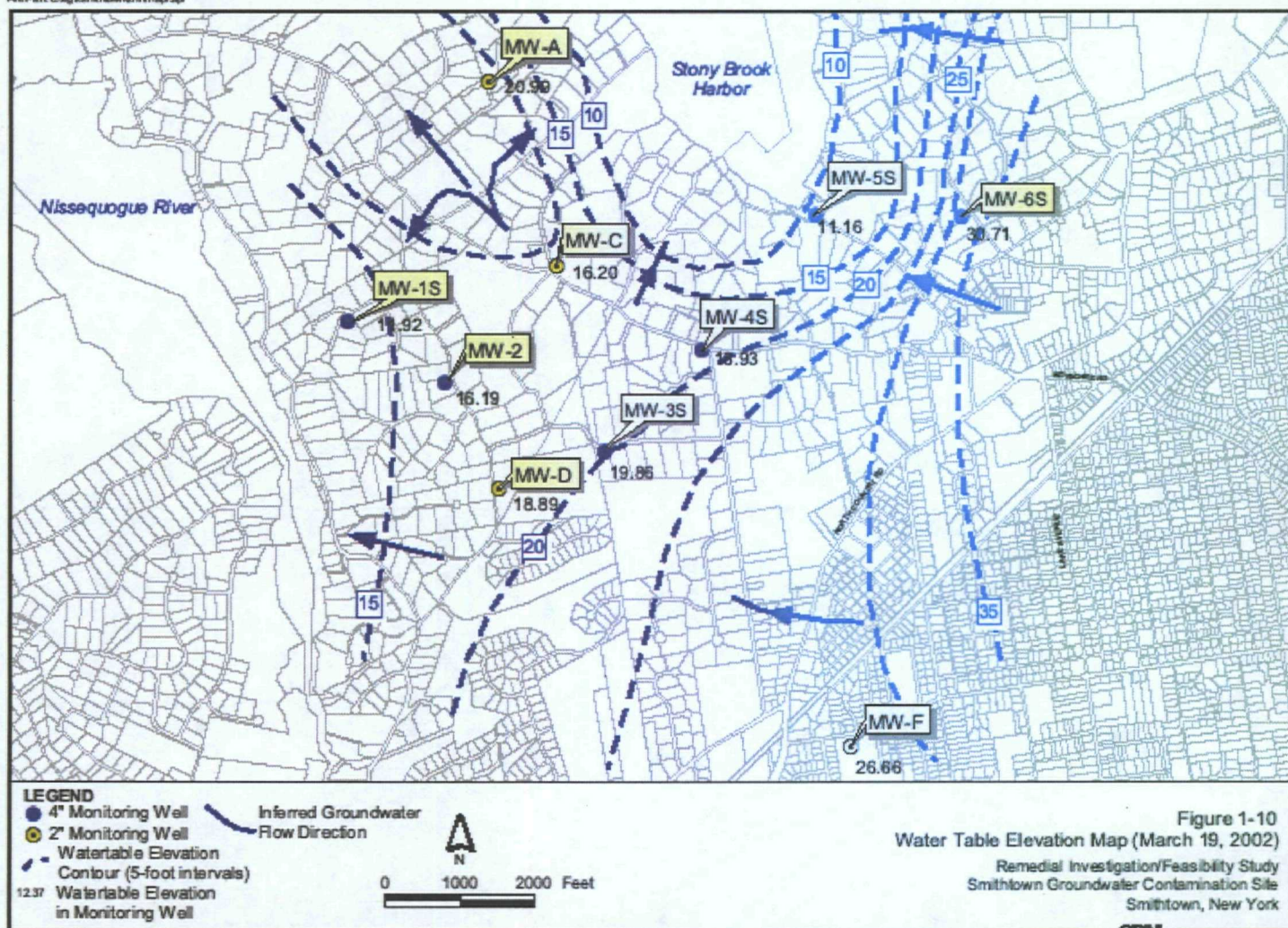


FIGURE 2: GROUNDWATER MONITORING WELL LOCATIONS AND GROUNDWATER FLOW